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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/764,011

Applicant(s)

PEDLOW ET AL.

Examiner

RICKY CHIN

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 5-5-08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Zdepski et al., US 6,445,738 in view of Tiwari et al., US 6,327,421.

Regarding claim 1, Zdepski discloses a method of storing digital video content to facilitate trick play(See abstract), the content comprising intra-coded frames of video and inter-coded frames of video(See abstract which discloses MPEG, also figure 3), the method comprising: storing the inter-coded and the intra-coded frames of the content in a first file(See col. 4 lines 35-40, which disclose that the system receives a compressed normal play bitstream, which is stored); storing a duplicate of the intra-coded frames of the content in a second file(See col. 4 lines 35-45, which disclose that the system extracts I-frames and stores this information in one or more new files);

Zdepski does not explicitly teach of storing a set of indices as his invention does not require index look-ups. However, Zdepski acknowledges that storing indices is well-known in the art (col.4 lines 1-16) where it is disclosed of storing a set of forward indices that relates the intra coded frames with the inter-coded frames in a forward direction such that playback of the second file in the order of the forward indices simulates a fast-forward playback (See col. 4 lines 1-15, which discloses a look-up table including a plurality of indices which reference respective I frames); and storing a set of reverse indices that relates the intra-coded frames with the inter-coded frames in a reverse direction such that playback of the second file in the order of the reverse indices simulates a fast-reverse playback (See col. 8, lines 33-40, which discloses reversing the order of sequence for reverse trick play). Therefore, Zdepski although not requiring index look-ups in his invention acknowledges that look-up tables are well-known and therefore would have been obvious to one of skilled in the art to have incorporated index look-ups for the benefit of providing increased flexibility with regards to the capability of being able to adapt to user preferences and capability to be application specific wherein storage capacity is not prioritized. Furthermore, skip playback trickmode in which a user may jump to a particular section would also not be feasible without look-up tables, hence if skip mode is a desired functionality then using look-up tables would be the alternative.

Moreover, in the same field of endeavor, Tiwara discloses of storing a set of forward indices that relates the intra coded frames with the inter-coded frames in a forward direction such that playback of the second file in the order of the

forward indices simulates a fast-forward playback; and storing a set of reverse indices that relates the intra-coded frames with the inter-coded frames in a reverse direction such that playback of the second file in the order of the reverse indices simulates a fast-reverse playback (See col. 4 lines 10-33; col 5 lines 40-50). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of Zdepski with that of Tiwari as a whole for the benefit of providing increased flexibility with regards to the capability of being able to adapt to user preferences and capability to be application specific wherein storage capacity is not prioritized and wherein varying speeds of trick play such as 27x fast forward and varying bit rates without overflow occurrence is prioritized (Tiwari, col.5 lines 10-47). Furthermore, skip playback trickmode in which a user may jump to a particular section would also not be feasible without look-up tables, hence if skip mode is a desired functionality then using look-up tables would be the alternative.

Regarding claim 2, the combination further discloses all of the claim limitations of the method according to claim 1, further the combination teaches of generating the set of forward indices and the set of reverse indices for storage (See Tiwari, See col. 4 lines 10-33; col 5 lines 40-50, in which it would be inherent for the indices to be stored since the video server indexes into a look-up table).

Regarding claim 3, the combination discloses all of the claim limitations of the method according to claim 1, further the combination teaches of wherein

the digital video content is MPEG encoded, wherein the intra-coded frames comprise I-frames, and wherein the inter-coded frames comprise P-frames and B-frames(It is an inherent feature of MPEG to compose of intra-coded frames (I-frames) and inter-coded frames(B,P frames)).

Regarding claim 4, the combination discloses all of the claim limitations of the method according to claim 1, further the combination teaches of retrieving the inter-coded and the intra-coded frames from the first file to produce a normal playback stream(See Zdepski, col.7, lines 20-23 which disclose that the system receives a normal play bitstream).

Regarding claim 5, the combination discloses all of the claim limitations of the method according to claim 4, the combination further teaches of retrieving the intra-coded frames from the second file in the order of the forward indices to produce a fast forward playback stream, and wherein the retrieving of intra-coded frames from the second file starts at a frame near a current playback point in the normal playback stream, and wherein the frame near the current playback point is determined from the forward indices(See Zdepski, col. 3 lines 56-67 and col. 4 lines 1-16, which disclose that the respective fast forward trick play stream is then transferred to the user at the appropriate point where the user was watching; See Tiwari, col. 4 lines 10-33;col 5 lines 40-50 which addresses the forward indices for fast forward).

Regarding claim 6, the combination discloses all of the claim limitations of the method according to claim 1, the combination further teaches of retrieving the intra-coded frames from the second file in the order of the forward indices to produce a fast forward playback stream (See Tiwari, col. 4 lines 10-33; col 5 lines 40-50; See Zdepski, col. 10, lines 34-46).

Regarding claim 7, the combination discloses all of the claim limitations of the method according to claim 6, further the combination teaches of retrieving the inter-coded and intra-coded frames from the first file in the order of the forward indices to produce a normal playback stream, and wherein the retrieving of inter-coded and intra-coded frames from the first file starts at a frame near a current playback point in the fast forward playback stream, and wherein the frame near the current playback point is determined from the forward indices (See col. 3 lines 56-67 and col. 4 lines 1-16, which disclose that the respective fast forward trick play stream is then transferred to the user at the appropriate point where the user was watching; See Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses forward indices for fast forward).

Regarding claim 8, the combination discloses all of the claim limitations of the method according to claim 1, further the combination teaches of retrieving the intra-coded frames from the second file in the order of the reverse indices to produce a fast reverse playback stream (See Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses reversing indices for reverse playback; Zdepski, col. 8

lines 33-42, which discloses that for a fast reverse trick play the verifier/Fixer 104 reverses the order of the sequence header/I frame groupings or tuples to produce a reverse play sequence).

Regarding claim 9, the combination teaches all of the claim limitations of the method according to claim 8, further the combination teaches of retrieving the inter-coded and intra-coded frames from the first file in the order of the forward indices to produce a normal playback stream, and wherein the retrieving of inter-coded and intra-coded frames from the first file starts at a frame near a current playback point in the fast reverse playback stream, and wherein the frame near the current playback point is determined from the reverse indices(See col. 3 lines 56-67 and col. 4 lines 1-16, which disclose that the respective fast reverse trick play stream is then transferred to the user at the appropriate point where the user was watching; See Tiwari, col. 4 lines 10-33;col 5 lines 40-50which addresses indices for reverse playback).

Regarding claim 10, the claim has been analyzed and rejected for the same reasons set forth in the rejection of claim 1. Furthermore, Tiwari (See col. 4 lines 10-33; col 5 lines 40-50) discloses of reversing the stored indices for reverse playback and Zdepski (See col. 8, lines 33-40) discloses reversing the order of sequence for reverse trick play.

Regarding claim 11, the combination teaches all the claim limitations of

Art Unit: 2623

the method according to claim 10, further the combination teaches of generating the set of indices for storage (See Tiwari, col. 4 lines 10-33; col 5 lines 40-50, in which it would be inherent that the indices would be stored since the video server indexes into a look-up table.)

Regarding claim 12, the combination teaches all the claim limitations of the method according to claim 10, further the combination teaches of wherein the digital video content is MPEG encoded, wherein the intra-coded frames comprise I-frames, and wherein the inter-coded frames comprise P-frames and B-frames. (It is an inherent feature of MPEG to compose of intra-coded frames (I-frames) and inter-coded frames (B,P frames)).

Regarding claim 13, the combination teaches all the claim limitations of the method according to claim 10, further the combination teaches of retrieving the inter-coded and the intra-coded frames from the first file to produce a normal playback stream (See Zdepski, col.7, lines 20-23 which disclose that the system receives a normal play bitstream).

Regarding claim 14, the combination teaches all the claim limitations of the method according to claim 13, further the combination teaches of retrieving the intra-coded frames from the second file in a first order of the indices to produce a fast forward playback stream, and wherein the retrieving of intra-coded frames from the second file starts at a frame near a current playback point in the

normal playback stream, and wherein the frame near the current playback point is determined from the indices (See Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses indices for forward playback; Zdepski, col. 3 lines 56-67 and col. 4 lines 1-16, which disclose that the respective fast forward trick play stream is then transferred to the user at the appropriate point where the user was watching).

Regarding claim 15, the combination teaches all the claim limitations of the method according to claim 10, further the combination teaches of retrieving the intra-coded frames from the second file in a first order of the indices to produce a fast forward playback stream (See Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses indices for fast forward playback; Zdepski, col. 10, lines 34-46).

Regarding claim 16, the combination teaches all the claim limitations of the method according to claim 15, further the combination teaches of retrieving the inter-coded and intra-coded frames from the first file to produce a normal playback stream, and wherein the retrieving of inter-coded and intra-coded frames from the first file starts at a frame near a current playback point in the fast forward playback stream, and wherein the frame near the current playback point is determined from the indices (See Zdepski, col. 3 lines 56-67 and col. 4 lines 1-16, which disclose that the respective fast forward trick play stream is then transferred to the user at the appropriate point where the user was watching;

See Tiwari, col. 4 lines 10-33;col 5 lines 40-50 which addresses indices for fast forward playback).

Regarding claim 17, the combination teaches all the claim limitations of the method according to claim 10, further the combination teaches of retrieving the intra-coded frames from the second file in a second order of the indices to produce a fast reverse playback stream (See Tiwari, See col. 4 lines 10-33;col 5 lines 40-50 which addresses indices for fast reverse playback; See Zdepski, col. 8 lines 33-42, which discloses that for a fast reverse trick play the verifier/Fixer 104 reverses the order of the sequence header/I frame groupings or tuples to produce a reverse play sequence).

Regarding claim 18, the combination teaches all the claim limitations of the method according to claim 17, further the combination teaches of retrieving the inter-coded and intra-coded frames from the first file to produce a normal playback stream, and wherein the retrieving of inter-coded and intra-coded frames from the first file starts at a frame near a current playback point in the fast reverse playback stream, and wherein the frame near the current playback point is determined from the indices(See Zdepski, col. 3 lines 56-67 and col. 4 lines 1-16, which disclose that the respective fast reverse trick play stream is then transferred to the user at the appropriate point where the user was watching; See Tiwari, col. 4 lines 10-33;col 5 lines 40-50 which addresses indices for fast reverse playback).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims (19-44) are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyle, US 6,453,115 in view of Tiwari et al., US 6,327,421 and in further view of Carubba et al., US 5,629,866.

Regarding claim 19, Boyle and Tiwari discloses a method of storing digital video content to facilitate trick play, the content comprising intra-coded frames of video and inter-coded frames of video([Boyle], see abstract which discloses MPEG; Tiwari, see Abstract which also discloses MPEG). Boyle and Tiwari further disclose storing a set of forward and reverse indices that relate the intra-coded frames to the inter-coded frames in a forward direction and reverse direction for simulating fast-reverse and fast-forward playback([Boyle], col.3 lines 1-45 and col.6 38-50, which disclose a storage subsystem and storage controller wherein the storage controller identifies a start of the intra-coded reference frames and generates an index data structure. Furthermore the controller also identifies the start of the predictive coded reference frames and generates an index structure providing data indicative of the location of the predictive coded frames for implementing trickplay functions such as fast forward and rewind;

Art Unit: 2623

Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses forward and reversed indices).

However, the teachings of Boyle and Tiwari do not explicitly teach of the method comprising: storing the inter-coded frames of the content in a first file and storing the intra-coded frames of the content in a second file. However, in the same field of endeavor of performing the presentation of audio-visual content, Carubba (col.5 lines 51-60), discloses a storage medium s1 storing the intra coded pictures and a second storage medium for storing predictive and bidirectional coded pictures).

Therefore it would have been obvious of one of ordinary skill in the art to have combined the teachings of Boyle and Tiwari with that of Carubba for the benefit of allowing trickplay functions which can be accessed more readily for display and increasing the efficiency of transmission of the video stream while still permitting display that is more flexible (Boyle, col.10 lines 54-65; col. 14 lines 1-15).

Regarding claim 20, the combination teaches all the claim limitations of the method according to claim 19, the combination further teaches of generating the set of forward indices and the set of reverse indices for storage. ([Boyle], col.3 lines 1-45 and col.6 38-50, which disclose a storage subsystem and storage controller wherein the storage controller identifies a start of the intra-coded reference frames and generates an index data structure. Furthermore the controller also identifies the start of the predictive coded reference frames and

Art Unit: 2623

generates an index structure providing data indicative of the location of the predictive coded frames for implementing trickplay functions such as fast forward and rewind; Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses forward and reversed indices).

Regarding claim 21, the combination teaches the claim limitations of the method according to claim 19, the combination further teaches of wherein the digital video content is MPEG encoded, wherein the intra-coded frames comprise I-frames, and wherein the intra-coded frames comprise P-frames and B-frames. ([Boyle], see abstract which discloses MPEG; Tiwari, see Abstract which also discloses MPEG).

Regarding claim 22, the combined teachings of Boyle, Tiwari and Carubba teach all the claim limitations of the method according to claim 19, the combination further teaches of retrieving the inter-coded frames from the first file and the intra-coded frames from the second file to produce a normal playback stream.([Carubba], col.6 lines 40-44, which discloses the merging of the basic and the complementary part)

Regarding claim 23, the combined teachings of Boyle, Tiwari and Carubba teach all the claim limitations of the method according to claim 22, the combination further teaches of retrieving the intra-coded frames from the second file in the order of the forward indices to produce a fast forward playback stream,

and wherein the retrieving of intra-coded frames from the second file starts at a frame near a current playback point in the normal playback stream, and wherein the frame near the current playback point is determined from the forward indices. (See Boyle col.12 lines 48-60 which discloses displaying from that point in normal mode from where the skip location is desired; Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses forward and reversed indices. Furthermore, playing a fast forward stream from a point near the normal playback is well-known in the art as [Zdepski], See col. 3 lines 56-67 and col. 4 lines 1-16, discloses that the respective fast forward trick play stream is then transferred to the user at the appropriate point where the user was watching and further discloses that the look-up table includes a plurality of indices which reference respective frames)

Regarding claim 24, the combined teaching of Boyle, Tiwari and Carubba teach all the claim limitations of the method according to claim 19, the combination further teaches of retrieving the intra-coded frames from the second file in the order of the forward indices to produce a fast forward playback stream. ([Boyle], col.3 lines 1-45 and col.6 38-50, which disclose a storage subsystem and storage controller wherein the storage controller identifies a start of the intra-coded reference frames and generates an index data structure. Furthermore the controller also identifies the start of the predictive coded reference frames and generates an index structure providing data indicative of the location of the predictive coded frames for implementing trickplay functions such as fast forward

Art Unit: 2623

and rewind; Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses forward and reversed indices). Furthermore, producing fast forward playback from forward indices is well known- in the art as disclosed by ([Zdepski], col. 10, lines 34-46).

Regarding claim 25, the combined teachings of Boyle, Tiwari and Carubba teach all the claim limitations of the method according to claim 24, the combination further teaches of retrieving the intra-coded frames from the second file and the inter-coded frames from the first file in the order of the forward indices to produce a normal playback stream, and wherein the retrieving of the inter-coded frames from the first file starts at a frame near a current playback point in the fast forward playback stream, and wherein the frame near the current playback point is determined from the forward indices. ([Boyle], col.3 lines 1-45 and col.6 38-50, which disclose a storage subsystem and storage controller wherein the storage controller identifies a start of the intra-coded reference frames and generates an index data structure. Furthermore the controller also identifies the start of the predictive coded reference frames and generates an index structure providing data indicative of the location of the predictive coded frames for implementing trickplay functions such as fast forward and rewind; Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses forward and reversed indices). Furthermore, it is well known- in the art as disclosed by [Zdepski], col. 3 lines 56-67 and col. 4 lines 1-16, which disclose that the respective fast forward trick play stream is then transferred to the user at the

appropriate point where the user was watching).

Regarding claim 26, the combined teachings of Boyle, Tiwari, and Carubba teach all the claim limitations of the method according to claim 19, the combination further teaches of retrieving the intra-coded frames from the second file in the order of the reverse indices to produce a fast reverse playback stream. ([Boyle], col.3 lines 1-45 and col.6 38-50, which disclose a storage subsystem and storage controller wherein the storage controller identifies a start of the intra-coded reference frames and generates an index data structure. Furthermore the controller also identifies the start of the predictive coded reference frames and generates an index structure providing data indicative of the location of the predictive coded frames for implementing trickplay functions such as fast forward and rewind; Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses forward and reversed indices). Furthermore, it is well known- in the art as discloses by ([Zdepski], col. 8 lines 33-42, which discloses that for a fast reverse trick play the verifier/Fixer 104 reverses the order of the sequence header/I frame groupings or tuples to produce a reverse play sequence).

Regarding claim 27, the combined teachings of Boyle, Tiwari, and Carubba teach all the claim limitations of the method according to claim 26, the combination further teaches of retrieving the intra-coded frames from the second file and the inter-coded frames from the first file in the order of the forward indices to produce a normal playback stream, and wherein the retrieving of intra-

coded frames from the second file and the inter-coded frames from the first file starts at a frame near a current playback point in the fast reverse playback stream, and wherein the frame near the current playback point is determined from the reverse indices. ([Boyle], col.3 lines 1-45 and col.6 38-50, which disclose a storage subsystem and storage controller wherein the storage controller identifies a start of the intra-coded reference frames and generates an index data structure. Furthermore the controller also identifies the start of the predictive coded reference frames and generates an index structure providing data indicative of the location of the predictive coded frames for implementing trickplay functions such as fast forward and rewind; Tiwari, col. 4 lines 10-33; col 5 lines 40-50 which addresses forward and reversed indices. Furthermore, it is well known- in the art as disclosed by [Zdepski], col. 3 lines 56-67 and col. 4 lines 1-16, which disclose that the respective fast reverse trick play stream is then transferred to the user at the appropriate point where the user was watching and that the look-up table includes a plurality of indices which reference respective frames).

Regarding claims 28-36, the claims have been analyzed and rejected for the same reasons set forth in the rejection of claims 19-27.

Regarding claims 37-42, the claims have been analyzed and rejected for the same reasons set forth in the rejection of claims 19-27.

Regarding claim 43, the claim has been analyzed and rejected for the same reasons set forth in the rejection of claim 19. Performing said method of claim 19 would imply and necessitate a storage device of claim 43.

Regarding claim 44, the claim has been analyzed and rejected for the same reasons set forth in the rejection of claim 19. Performing said method of claim 19 would imply and necessitate a storage device of claim 44.

Contact

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ricky Chin whose telephone number is 571-270-3753. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Koenig can be reached on 571-272-7296. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

Art Unit: 2623

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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